

FIG. 1

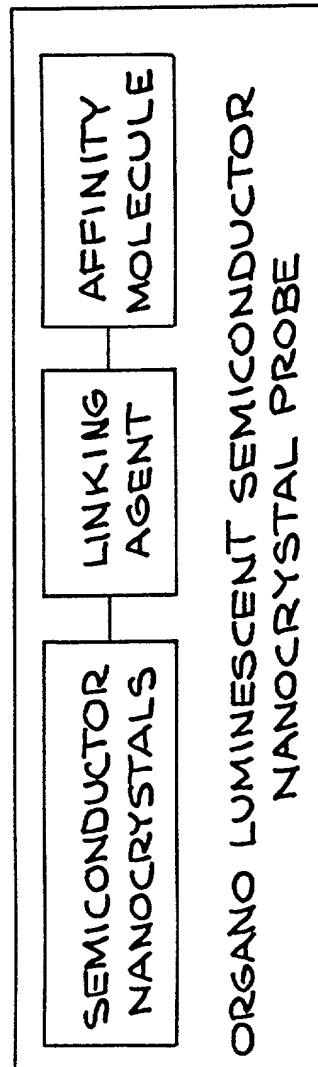


FIG. 2

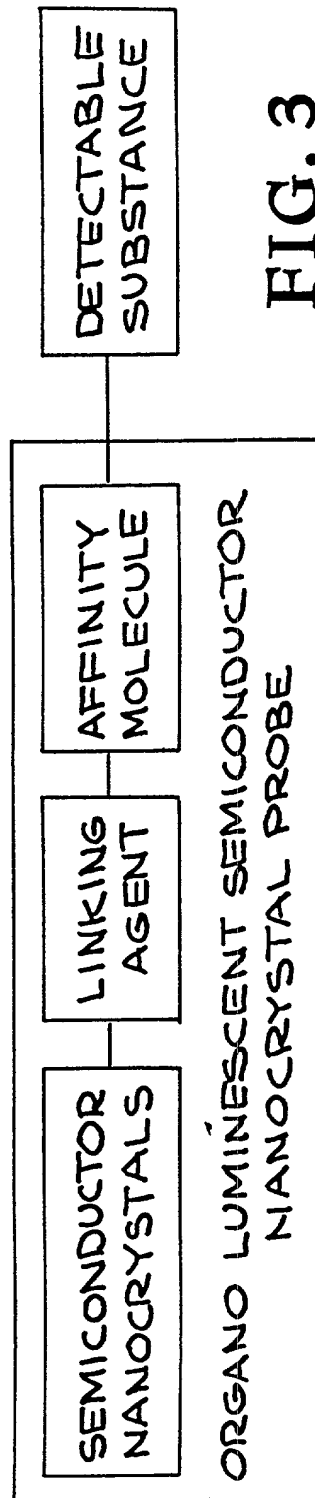


FIG. 3

LINKING TOGETHER A SEMICONDUCTOR
NANOCRYSTAL CAPABLE OF EMITTING
RADIATION IN A NARROW WAVELENGTH BAND
AND
ONE OR MORE LINKING AGENTS CAPABLE OF
ALSO LINKING TO AN ORGANIC AFFINITY
MOLECULE;

AND
LINKING TOGETHER AN ORGANIC AFFINITY
MOLECULE CAPABLE OF SELECTIVELY
BONDING WITH A DETECTABLE SUBSTANCE
AND
THE ONE OR MORE LINKING AGENTS CAPABLE
OF ALSO LINKING TO A SEMICONDUCTOR
NANOCRYSTAL;

TO THEREBY FORM AN ORGANO LUMINESCENT
SEMICONDUCTOR NANOCRYSTAL PROBE
CAPABLE OF BONDING TO A DETECTABLE
SUBSTANCE IN A MATERIAL AND, FOR
EXAMPLE, TO EMIT RADIATION OF A NARROW
WAVELENGTH BAND WHEN EXPOSED TO
EXCITATION ENERGY TO INDICATE THE
PRESENCE OF THE DETECTABLE SUBSTANCE

FIG. 4

DETERMINING THE PRESENCE OF A
DETECTABLE SUBSTANCE IN A BIOLOGICAL
MATERIAL BY CONTACTING THE BIOLOGICAL
MATERIAL WITH AN ORGANO LUMINESCENT
SEMICONDUCTOR NANOCRYSTAL PROBE
COMPRISING :

1. A SEMICONDUCTOR NANOCRYSTAL
CAPABLE OF EMITTING, ABSORBING,
SCATTERING, OR DIFFRACTING ENERGY IN A
NARROW FREQUENCY BAND WHEN EXCITED;
2. AN AFFINITY MOLECULE CAPABLE OF
BONDING TO THE DETECTABLE SUBSTANCE;
AND
3. ONE OR MORE LINKING AGENTS CAPABLE
OF LINKING TO BOTH THE SEMICONDUCTOR
NANOCRYSTAL AND THE AFFINITY MOLECULE

REMOVING FROM THE BIOLOGICAL MATERIAL
PORTIONS OF THE ORGANO LUMINESCENT
SEMICONDUCTOR NANOCRYSTAL PROBE NOT
BONDED TO THE DETECTABLE SUBSTANCE

EXPOSING THE BIOLOGICAL MATERIAL TO
ENERGY CAPABLE OF EXCITING THE
SEMICONDUCTOR NANOCRYSTAL IN ANY
ORGANO-LUMINESCENT DETECTION
COMPOUND PRESENT IN THE BIOLOGICAL
MATERIAL TO EMIT, ABSORB, SCATTER OR
DIFFRACT ENERGY

DETECTING ANY ENERGY EMITTED AND /OR
ANY ABSORBED, AND/OR SCATTERED OR
DIFFRACTED BY THE SEMICONDUCTOR
NANOCRYSTAL INDICATING THE PRESENCE IN
THE BIOLOGICAL MATERIAL OF ANY
DETECTABLE SUBSTANCE BONDED TO THE
ORGANO-LUMINESCENT DETECTION
COMPOUND

FIG.5